UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,707	01/11/2002	Dale E. Gulick	2000.052200/RSBTT4036	1281

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EXAMINER
TO, JENNIFER N

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/044,707	GULICK, DALE E.
	Examiner	Art Unit	
	Jennifer N. To	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)	5) ☐ Notice of Informal Patent Application (PTO-152)
Paper No(s)/Mail Date _____.	6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-28 are pended for examination.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 1-7, and 15-21 are rejected under 35 U.S.C. 101 because the claimed

invention is directed to non-statutory subject matter.

4.   Claims 1-7 are directed to method steps in which can be practiced mentally in

conjunction with pen and paper, therefore they are directed to non-statutory subject

matter. Specifically, as claimed, it is uncertain what performs each of the claimed

method steps. Moreover, each of the claimed steps, inter alia, (storing, determining,

processing, calling) can be practiced mentally in conjunction with pen and paper that is

not tied to a technological art, environment, or machine which would result in a practical

application producing a concrete, useful, tangible result to form the basis of statutory

subject matter under 35 U.S.C. 101. Therefore, the claimed invention is directed to

non-statutory subject matter. The claims should be amended to indicate a computer

implements the subject matter.   (i.e. a computer implemented method).

5.   As per claims 15-21, "an article" embedded in a computer readable media,

wherein computer readable media defined as transmission-type media (specification,

page38, lines 4-9). <u>The article embedded in a transmission-type medium</u> does not

produce a tangible result. Therefore, claims 15-21 are non-statutory.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter in which the applicant regards as his invention.

7.   Claims 3, 7-14, 17, and 21-29 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.

The claim language in the following claims is not clearly understood:

i.   as per claim 3, lines 1-3, it is not clearly understood what is meant by

"storing the one or more tasks in the queue comprises generating an

interrupt <u>and</u> storing the one or more tasks in <u>the queue</u> in response to

detecting the interrupt (i.e. there are two queue in this situation; one

before the generating the interrupt and the other queue in response to

detecting the interrupt; or <u>wherein storing the one or more tasks in the</u>

<u>queue comprises: generating an interrupt; and in response to detecting</u>

<u>the interrupt.</u>).

ii.   as per claim 7, lines 3-4, it is not clearly understood what is meant by "the

pre-selected time <u>substantially corresponds</u> to the amount of time required

for the task to complete executing" (i.e. what is the amount of time that

can be "substantially corresponds", based on what standard or criteria).

    iii.   as per claim 8, line 2, it is not clearly understood what is "task picker"

refers to (i.e. task dispatcher or idle task). Line 5, it is uncertain what "the

task" refers to (i.e. the at least one task). Lines 6-7, it is not clearly

understood what is meant by "execute the task picker in response <u>to</u>

<u>executing the task</u> and continue executing the task picker until a pre-

selected event occurs" (i.e. execute the task picker in response to finish

executing the at least one task, and continuing to execute the task picker

until interrupt occurs).

    iv.   as per claims 17, and 21-22, they are having the same deficiencies as

claims 3, and 7-8. Appropriate corrections are required.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-3, 5-7, 15-17, 19-22, 24-25, and 27-28 are rejected under 35 U.S.C.

103(a) as being unpatentable over Lindsley (U.S. Patent No. 6430593), and in view of

Carmon (U.S. Patent No. 5640563).

10.   As per claim 1, Lindsley teaches the invention substantially as claimed including

a method comprising:

each task has an associated exit routine (fig. 8; col. 6, lines 5-10; col. 8, lines 36-37); and

calling the exit routine based on determining that the task has not complete

processing within a pre-selected period of time (col. 6, lines 39-47; col. 10, lines 1-25).

Lindsley did not specifically teach:

storing one or more tasks in a queue;

determining at least one task to process based on a priority scheme; and

processing the at least one task.

11.   However, Carmon teaches:

storing one or more tasks in a queue (abstract, lines 11-14; col. 3, lines 21-26;

col. 5, lines 1-3);

determining at least one task to process based on a priority scheme (col. 3, lines

26-37; col. 25, lines 29-40); and

processing the at least one task (col. 25, lines 38-41).

12.   It would have been obvious to one of an ordinary skill in the art at the time the

invention was made to have combined the teaching of Lindsley and Carmon, because

Carmon teaching of storing task(s) in a queue, determining task to process based on a

priority, and processing the task would improve the integrity of Lindsley's system by

reducing in task scheduling overhead consumed by the processor in scheduling the

tasks, this achieves a 50-100% improvement over conventional scheduling and operating systems (Carmon, abstract, lines 15-18).

13.   As per claim 2, Carmon teaches storing the one or more tasks in the queue comprises storing at least one task in the queue at every pre-selected time interval (col. 5, lines 26-57).

14.   As per claim 3, Carmon teaches storing the one or more tasks in the queue comprises generating an interrupt and storing the one or more tasks in the queue in response to detecting the interrupt (col. 6, lines 28-47; col. 10, lines 65-67; col. 11, lines 1-28).

15.   As per claim 5, Lindsley teaches calling the exit routine comprises calling the exit routine if the task does not complete executing within a pre-selected amount of time (col. 6, lines 39-46; col. 20, lines 14-61).

16.   As per claim 6, Lindsley teaches calling the exit routine comprises terminating the task currently processing and returning control to a task picker in the queue (col. 2, lines 62-67; col. 3, lines 1-3).

17.   As per claim 7, Carmon teaches processing the at least one task comprises executing the task and programming a timer to generate an interrupt after a pre-

selected time wherein the pre-selected time substantially corresponds to the amount of

time required for the task to complete executing (fig. 1; table; col. 11, lines 45-67; col.

12, lines 1-31).

18.   As per claims 15-17, and 19-21, these claims are article claim that correspond to

method claims 1-3, and 5-7. Therefore, these claims are rejected with the same reason

as method claims 1-3, and 5-7.

19.   As per claim 22, Lindsley teaches:

        a failure recovery timer to generate an interrupt at pre-selected time intervals,

wherein each pre-selected time interval is greater than the time it takes for each of the

tasks stored in the queue to execute (col. 10, lines 1-26; col. 29, lines 24-67).

        determine if the task completes execution within the pre-selected time interval

(col. 6, lines 48-58; col. 10, lines 26-35; col. 14, lines 57-63); and

        terminate the task in response to determining that the task failed to complete

within the pre-selected time interval (col. 8, lines 36-37; col. 11, lines 1-11, 26-32)

        Lindsley did not specifically teach:

        a queue having a task picker stored therein, the queue adapted to store one or

more tasks;

        a controller adapted to select a task to execute based on a priority scheme; and

        execute the task picker in response to terminating the task.

20.   However, Carmon teaches:

a queue having a task picker stored therein, the queue adapted to store one or

more tasks (col. 8, lines 52-64; col. 12, lines 34-58);

a controller adapted to select a task to execute based on a priority scheme (col.

3, lines 36-37; col. 25, lines 29-40); and

execute the task picker in response to terminating the task (col. 8, lines 52-64;

col. 25, lines 38-41).

21.   It would have been obvious to one of an ordinary skill in the art at the time the

invention was made to have combined the teaching of Lindsley and Carmon, because

Carmon teaching of storing task(s) in a queue, determining task to process based on a

priority, and processing the task would improve the integrity of Lindsley's system by

reducing in task scheduling overhead consumed by the processor in scheduling the

tasks, this achieves a 50-100% improvement over conventional scheduling and

operating systems (Carmon, abstract, lines 15-18).

22.   As per claim 24, Lindsley teaches each task has an associated exit routine and

wherein the controller terminates the task by calling the exit routine (col. 6, lines 39-46;

col. 20, lines 14-61).

23.   As per claims 25, and 28, Lindsley teaches the controller resets the failure

recovery timer before executing the task (col. 9, line 21-67; col. 28, lines 30-34).

24.   As per claim 27, Lindsley teaches a repetitive timer for generating interrupts on a

periodic basis wherein the controller posts a task in the queue in response to detecting

an interrupt generated by the repetitive timer (col. 10, lines 1-26; col. 29, lines 24-67).

25.   Claims 4, 18, 23, and 26 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lindsley (U.S. Patent No. 6430593), in view of Carmon (U.S. Patent

No. 5640563), as applied in claims 1, 22, and further in view of Kaneko et al. (hereafter

Kaneko) (U.S. Patent No. 5349656).

26.   Kaneko was cited in the last office action.

27.   As per claim 4, Lindsley and Carmon teach the invention substantially as claimed

in claim 1. Lindsley and Carmon did not specifically the priority scheme is a first-in, first-

out scheme.

28.   However, Kaneko teaches the priority scheme is a first-in, first-out scheme (col.

8, lines 1-12).

29.   It would have been obvious to one of an ordinary skill in the art at the time the

invention was made to have combined the teaching of Lindsley, Carmon and Kaneko,

because Kaneko step of determining the at least one task based on FIFO priority

scheme would improve the integrity of Lindsley and Carmon's system by preventing

task from suspension within the queue (Kaneko, col. 8, lines 11-12).

30.   As per claim 18, it is an article claim that corresponds with method claim 4.

Therefore, it is rejected with the same reason as method claim 4.

31.   As per claim 23, it is rejected with the same reason as claim 4.

32.   As per claim 26, Kaneko teaches that the controller determines if the task

completes execution within the pre-selected time interval comprises:

        detecting a first failure recovery interrupt (col. 7, lines 25-36);

        causing an interrupt service routine to determine a task ID associated with a task

executing at the time of the first failure recovery interrupt (col. 7, lines 37-45);

        logging the determined task ID (fig. 14, item 3102);

        detecting a second failure recovery interrupt (col. 14, lines 4-22);

        determining a task ID associated with as task executing at the time of the second

failure recovery interrupt (col. 14, lines 26-38); and

        terminating the task executing at the time of the second failure recovery interrupt

in response to determining that the two task IDs are the same (col. 8, lines 65-67).

33.   Claims 8-10, and 12-13 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Carmon (U.S. Patent No. 5640563).

34.   As per claim 8, Carmon teaches the invention substantially as claimed including:

       a queue having an idle task stored therein (col. 8, lines 52-64; col. 12, lines 34-

58);

       a controller communicatively coupled to the queue (fig. 1);

       determine if at least one task other than the idle task is stored in the queue (col.

12, lines 43-56; col. 13, lines 9-40);

       execute the task based on determining that at least one task other than the idle

task is stored in the queue (col. 13, lines 55-64); and

       execute the idle task in response to executing the task and continue executing

the idle task until a pre-selected event occurs (col. 15, lines 16-53).

       Carmon did not specifically teach task picker.

35.   However, Carmon disclosed idle task (fig. 1, item 2).

36.   It would have been obvious to one of an ordinary skill in the art at the time the

invention was made to have recognized that Carmon teaching of idle task is functional

equivalent to task picker for determining whether a given set of tasks can be schedule

at all. Therefore, one would be motivated to utilize this idea for scheduling of a

randomly occurring mix of periodically recurring tasks having varying executing periods (Carmon, col. 3, lines 16-18).

37.   As per claim 9, Carmon teaches the pre-selected event comprises detection of an interrupt (col. 6, lines 28-47; col. 10, lines 65-67; col. 11, lines 1-28).

38.   As per claim 10, Carmon teaches the pre-selected event comprises detection of another task being present in the queue (col. 6, lines 28-47; col. 10, lines 65-67; col. 11, lines 1-28).

39.   As per claim 12, it is rejected with the same reason as claim 8.

40.   As per claim 13, Carmon teaches the controller determines that more than one task is stored in the queue and wherein the controller selects a task to execute from the one or more tasks based on a priority scheme (col. 3, lines 36-37; col. 25, lines 29-40).

41.   Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carmon (U.S. Patent No. 5640563), as applied in claim 8, and in view of Lindsley (U.S. Patent No. 6430593).

42.   As per claim 11, Carmon teaches the invention substantially as claimed in claim 8. Carmon did not specifically teach an exit routine to terminate that task.

43.   However, Lindsey teaches an exit routine to terminate that task (col. 8, lines 36-37).

44.   It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Carmon and Lindsley, because Lindsey teaching of an exit routine to terminate that task would improve the integrity of Carmon's system by optimizing real-time multitasking for a processor (Lindsley, col. 3, lines 39-40).

45.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carmon (U.S. Patent No. 5640563), as applied in claims 8, 13, and in view of Kaneko et al. (hereafter Kaneko) (U.S. Patent No. 5349656).

46.   Kaneko was cited in the last office action.

47.   As per claim 14, Carmon teaches the invention substantially as claimed in claims 8 and 13. Carmon did not specifically teach the priority scheme is a first-in, first-out scheme.

48.   However, Kaneko teaches the priority scheme is a first-in, first-out scheme (col. 8, lines 1-12).

49.   It would have been obvious to one of an ordinary skill in the art at the time the

invention was made to have combined the teaching of Carmon and Kaneko, because

Kaneko step of determining the at least one task based on FIFO priority scheme would

improve the integrity of Carmon's system by preventing task from suspension within the

queue (Kaneko, col. 8, lines 11-12).

Response to Arguments

50.   Applicant's arguments with respect to claims 1-28 have been considered but are

moot in view of the new ground(s) of rejection.

Conclusion

51.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jennifer N. To whose telephone number is (571) 272-

7212. The examiner can normally be reached on M-T 7AM- 4:30 PM, F 7AM- 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer N To
Examiner
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